2.0 SITE DESCRIPTION

2.1 SITE LOCATION AND FEATURES

The Bonneville Dam is the most downstream dam within the Columbia-Snake River navigation system that consists of eight locks and dams (Figure 2-1). The dam is located at 45° 38' 27'' N - 121° 56' 31'' W. Bonneville Lock and Dam create a 48-mile-long reservoir from the Bonneville Dam upstream to the Dalles Dam. The river at the Bonneville Dam is divided into three channels by two islands, Bradford Island and Cascade Island. The tailrace for the first powerhouse forms one channel, the spillway forms channel the middle channel, and the tailrace channel for the second powerhouse forms the third channel (Figure 1-2).

The major features of the dam complex include the spillway, two powerhouses, two navigation locks, and a fish hatchery. The fish hatchery, main office, and navigation lock visitor center are located on the Oregon shore of the Columbia River. A warehouse and automotive garage facility, and navigation lock support facilities are located on Robins Island located in-between the Oregon shore and Bradford Island. The major features on Bradford Island include the visitor center, fish ladders, the service center building, the equipment building, and the sandblast building. A fish ladder is also located on Cascades Island, and a second visitor center is located on the north shore of the Columbia River in Washington State.

The old navigation lock is located adjacent to the first powerhouse and is no longer in use. The upstream side of the old navigation lock consists of an end sill (where the lock doors are located) that extends from the riverbed to an elevation of 40 feet mean sea level (msl). The current navigation lock is located immediately south of the old navigation lock and has an end sill that extends up to an elevation of 51 feet msl.

The first powerhouse has a flow capacity of approximately 128,000 cfs and a rated power output of 526,700 kilowatts (kW) (USACE, 2000). The second powerhouse has a flow capacity of approximately 160,000 cfs and a rated power output of 558,200 kW (USACE, 2000).

The normal operating range for the Bonneville pool is between 71.5 feet msl elevation and 76.5 feet msl as measured at the dam. The tailwater elevation varies in direct relationship to the river flow from about 7.0 feet msl at 70,000 cfs to 36.3 feet msl at a riverflow of 660,000 cfs (USACE, 1998).

An authorized federal navigation channel in this reach of the river is 300 feet wide and 27 feet deep, although the depth is currently maintained at 17 feet (USACE, 1991)

The spillway is a concrete, gravity structure with eighteen 50-ft-wide bays separated by 10-ft-wide piers. The spillway releases are controlled by eighteen 50-ft-wide by 60-ft-high spillway gates. The crest of the spillway is at 24.0 feet msl.

A former landfill site is located in the northeast corner of Bradford Island and is located within the State of Oregon. The landfill is no longer used for waste disposal. The area is currently

managed long term as wildlife habitat for geese under the Bonneville Master Plan. The elevation of the ground surface on the east side (upstream side) of Bradford Island near the landfill is approximately 110 feet msl.

Bathymetric surveys conducted by the USACE indicate that the depth of the pool near the Bonneville Dam is up to 100 feet deep.

A three-dimensional perspective view showing the upland topography as well as the river bathymetry looking upstream in the vicinity of the dam is provided in Figure 2-2, and a view downstream is provided in Figure 2-3.

2.2 SITE AND REGULATORY BACKGROUND

2.2.1 Site Background

History

Construction of the first powerhouse and navigation lock, spillway, fish passage facilities, fish hatchery, and office and maintenance buildings began in 1933, and was completed in the early 1940s. Between 1974 and 1981, a second powerhouse was constructed adjacent to the Washington State shore, to aid in supplying the electrical power needs of the Northwest. A second navigation lock was constructed on the Oregon side between 1989 and 1993. Associated with construction of the new lock, the southeastern edge of Bradford Island was excavated to improve the approach channel.

Landfill-Related Environmental Investigations

In 1993, a USACE internal review of the Bonneville Lock and Dam site and operations was performed to evaluate compliance with environmental regulations. As a result of this review, the Bradford Island landfill was identified as a potential source of environmental impairment based on past waste management and disposal practices.

The landfill, located on the northeast edge of Bradford Island, was used as a waste disposal site from the early 1940s until the early 1980s. Investigations have identified a wide variety of waste materials at the landfill including: concrete rubble, steel cables, plastic planter buckets, partially burned construction debris, broken glass, ceramic electrical insulators, wood, tires, metal debris, roofing paper, sandblasting media and mercury vapor lamps.

During the investigations for the landfill, URS discovered light ballasts on the shore of the island. The discovery prompted an underwater survey that was conducted during October and November 2000. A partial removal effort was completed in December 2000 and in May 2001 an investigation was completed to assist the USACE in selecting the best method for removing the debris. Approximately 32 tons of waste was removed in February and March 2002. The removal activities are described in the Technical Memorandum, In-Water Removal Work (URS, 2002).

Non-Landfill Related Environmental Investigations

During disassembly and recycling of some polychlorinated biphenyl (PCB)-containing transformers by the USACE at Bradford Island, approximately 1 quart of PCB-containing oil was released on November 22, 1995. The release was contained using booms and sorbant pads. Runoff from the area is captured by the storm drain system and is conveyed to the Columbia River by underground pipes.

Other potential sources of contamination in this area that could impact the storm drain system include sandblast grit from the sandblast shop and blowdown water generated from a compressor located in the Service Center. Figure 2-4 depicts the approximate location of the storm drain system and identifies surrounding site features.

2.2.2 Regulatory Background

Federal Government

On June 13, 1996, the Portland District submitted a letter to the U.S. Environmental Protection Agency (EPA) Region 10 and the DEQ, informing them of the presence of the Bradford Island landfill. In response to the letter, the EPA requested that sediment samples be collected in the Columbia River around the landfill perimeter, and that groundwater seep samples be collected, if seeps were identified. The site was added to the Federal Facilities Compliance Docket, and EPA completed a review of the landfill site inspection (SI) report. In July 2000, the EPA removed the site from the docket giving the site a no further remedial action planned (NFRAP).

State Government

The Bradford Island landfill was added to the DEQ Environmental Cleanup Site Information (ECSI) database on April 1, 1997. On April 24, 1997, the USACE signed a Letter of Intent to participate in the DEQ's Voluntary Cleanup Program (VCP) for the investigation and remediation of the landfill site, and on November 6, 1997, signed an agreement letter for the landfill site. DEQ provides a review and approval of site investigation and cleanup activities.